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ABSTRACT

This study investigated the relationship between grammatical errors and communication breakdown by examining native speakers' ability to correct grammatical errors. The assumption was that communication breakdown exists to a certain degree if a native speaker cannot correct the error or if the correction distorts the information intended to be conveyed by the writer. The variables examined in the experiment were two grammatical items, namely articles and connecting words between clauses: three types of errors: omission, insertion, and wrong choice; and two passages. The subjects, 120 graduate students, all native speakers of English, corrected the texts that were mutilated in one of six different ways for one of two different passages. The results indicated that mutilation of articles was easier to correct than connectors for omission and wrong choice, but not for insertion type errors. These findings can be generalized over different kinds of passages when a synchronous scoring rule is used but not when a verbatim rule is used. Generally, the findings have implications for the assessment of comprehension as measured by cloze procedure and for the assessment of writing competence. (Author/AMH)

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GRAMMATICAL ERRORS AND COMMUNICATION BREAKDOWN

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Abstract

Grammatical accuracy is not always required of an ESL student to accomplish communication with native English speakers. In this study, the relationship between grammatical errors and communication breakdown was investigated by examining native speakers' ability to correct grammatical errors on the assumption that communication breakdown exists to a certain degree if a native speaker cannot correct the error or the correction distorts the information intended to be conveyed by the writer. Two grammatical items, i.e., articles (local feature) and connectors (global feature); three types of errors, i.e., omission, insertion, and wrong choice; and two passages were the variables examined in the experiment. The subjects corrected the texts which were mutilated in one of six different ways (two grammatical items x three types of errors) for one of two different passages. The results indicated that mutilation of articles was easier to correct and hence less crucial to communication than connectors for omission and wrong choice type but not for insertion type. These findings can be generalized over different kinds of passages when a synonymous scoring rule is used but not when a verbatim rule is used; the latter produces a passage effect. Judgment of likely academic achievement was also affected by grammatical item. Overall, the findings have implications for the measurement of comprehension as measured by cloze procedure and for the assessment of writing competence.

GRAMMATICAL ERRORS AND COMMUNICATION BREAKDOWN

Machiko Tomiyama

There exists evidence that grammatical accuracy is not always required of an ESL student to accomplish communication. However, for many years teachers of ESL have insisted upon the grammatical accuracy of students' performance. "Foreign language teachers have been trained to correct faulty student responses quickly and consistently for grammatical and pronunciation errors assuming that correct learning will result" (Holley & King, 1974:81). Moreover, "all mistakes are corrected with equal vigor" (Burt & Kiparsky, 1974:71). Holley and King are convinced that "student communication in the foreign language may be actively discouraged by the instructor who insists upon grammatical accuracy" (1974:81). Accuracy in linguistic usage with respect to communication and to language learning is then an issue that needs to be considered in the field of language teaching.

The main purpose of this study was to investigate the relationship between grammatical errors and communication breakdown. More specifically, the intent was to examine the kinds of grammatical errors which may or may not affect communication with native speakers of English. The scope of the investigation has been limited to examining the effects of syntactic errors only. Furthermore, since the experimental design called for a written text to be used, the discussion of communication in this study is restricted to written communication.

In a recent paper, Burt and Kiparsky (1974) hypothesized that the correction of global mistakes contributes more to native speakers' comprehension of sentences than the correction of local mistakes. Global mistakes are those that violate rules involving the overall structure of a sentence, the relations

among constituent clauses, or in a simple sentence, the relations among major constituents. Local mistakes cause trouble in a particular constituent or in a clause of a complex sentence. Most typical of global mistakes are those which confuse the relationship among clauses, such as use of connectors, especially meaningful ones, distinctions between coordinate and relative clause constructions, parallel structure in reduced coordinate clauses and tense continuity across clauses. Local mistakes include mistakes in agreement, articles, noun phrase formation and so on. Burt and Kiparsky tried to determine which correction made the sentence comprehension easier by asking many native speakers of English.

In the present experiment, connectors and articles were chosen to be examined as the two grammatical items which represent global and local distinction, respectively. The term connectors is defined here as connecting words which show the relationship between two clauses in one sentence. It includes coordinate conjunctions, subordinate conjunctions, words that introduce embedded yes-no and WH-questions, such as if, whether, when, etc., and relatives. The choice of these two grammatical items is also based on error analyses (Blaz, 1966; Faustino, 1971; Floresheim, 1972; Kimizuka, 1968; Robinson, 1970; Waymire, 1965) which revealed that articles and connectors are two highly frequent categories of grammatical errors made by students of several different language backgrounds.

The present study also included the way students make errors with these grammatical items as one variable of grammatical errors. Error analyses showed that errors in usage of grammatical items can be categorized into three different types: 1) omission of the item where it is obligatory, 2) insertion

of the item where it should not occur, and 3) wrong choice of the item. These will be referred to as type of error, and articles and connectors as grammatical item. Therefore, a grammatical error consists of two parts: grammatical item and type of error. The third variable studied, passage, was also included among the variables in order to examine if the findings could be generalized over different kinds of passages.

In the present experiment, communication breakdown was measured by scoring native speakers' ability to correct the errors on the assumption that if native speakers can correct the grammatical errors and that correction is semantically in accordance with what was on the mind of the writer, communication breakdown is not present. In contrast, if a native speaker cannot correct the error or the correction distorts the information intended to be conveyed by the writer, communication breakdown exists to a certain degree.

Method

Subjects. The subjects were 120 graduate students from the Education and Language Departments at a large western public university. All subjects were native speakers of English. There were 76 females and 44 males in the sample.

Materials. Two passages, both approximately 200 words in length, were used as the basis for mutilation. One passage dealt with a personal topic and was taken from a model student essay (hereafter called Passage 1). The other passage was taken from an answer to an essay exam on Greek democracy

(hereafter called Passage 2). The former could be classified as narrative and the latter expository. The two passages were selected as representative of the kinds of passages that ESL students are likely to be required to write in their academic careers.

Each passage was mutilated in six different ways: namely, 1) omission of articles, 2) omission of connectors, 3) insertion of articles, 4) insertion of connectors, 5) wrong choice of articles, and 6) wrong choice of connectors. Table 1 provides examples of these six types of mutilations. Each text included only one type of mutilation. Approximately fifty percent of the instances of articles and connectors were mutilated. Only the instances where the context made the occurrence or the lack of the specific articles or connectors obligatory were mutilated. There were seven instances of mutilation in each text.

Design. The basic design in the experiment was 2x3x2 between subjects factorial design. The independent variables were (a) grammatical item with two levels, articles and connectors; (b) type of error with three levels, omission, insertion, and wrong choice; and (c) passage with two levels, Passage 1 and Passage 2. Each subject was randomly assigned to only one of the 12 mutilated texts. Thus the sample size for each cell was 10.

Tasks. The subjects' task was to read the text and to correct the errors within a 10-minute limit. After that they were asked to answer a few questions, one of which was to rate the likely academic achievement of the person who wrote the passage.

Dependent Measure. The main dependent measure was the correction score. Two scoring schemes were used. One was to give one point to a correction which

TABLE 1
TYPES OF MUTILATION

Types of Mutilation	E x a m p l e
1. Omission of Articles	- --- people should have a chance to govern state of Athens.
2. Omission of Connectors	- This type of democracy certainly doesn't exist today ___ many modern critics maintain that ---
3. Insertion of Articles	- They sent him out of Greece, into <u>an</u> exile for ten years.
4. Insertion of Connectors	- <u>Although</u> this is true <u>but</u> democracy has developed ---
5. Wrong choice of Articles	- --- if anyone of them was harmful to <u>a</u> country of Greece.
6. Wrong choice of Connectors	- <u>Why</u> its basic concern is man and his welfare in the world ---

identified the place of the error and provided the correction which was exactly the same as the original. The other scheme gave credit not only to the correction which was identical but also to the ones that were paraphrased; that is, the words supplied were acceptable in meaning. It could be said that the former scoring scheme, which will be called Score 1 hereafter, is more stringent than the latter, which will be called Score 2.

Procedures. The experiment was administered by the author during the respective class hour during the first and second week of April, 1977 of each participating course. In the initial briefing, subjects were told that the purpose of the study was to examine the effect of errors in sentences on communication. After filling out the demographic information questionnaire, subjects were instructed to begin the task following the directions.

Data Analysis. The results were analyzed statistically by use of 2x3x2 analysis of variance. Where significant effects occurred, the Scheffé Method (Kirk 1968:90-1) was used to determine which means differed significantly.

Results

Correction Score 2. When Score 2, the less stringent scoring scheme, was used as a dependent measure, the analysis of variance results indicated that there was a significant main effect for grammatical item with the score on mutilation of articles being higher than the score on mutilation of connectors. A significant main effect for type of error was also obtained. A comparison of means, using the Scheffé Method, indicated that the score on

insertion was significantly higher than the omission or wrong choice ($p < .001$). No significant difference between omission and wrong choice was found.

There was a significant interaction between grammatical item and type of error. The Scheffé Method indicated that the score on omission of articles was significantly higher than the score on omission of connectors ($p < .001$). The score on wrong choice of articles was significantly higher than wrong choice of connectors ($p < .001$). However, no significant difference between articles and connectors was found for insertion. The score on insertion of connectors or articles was significantly higher than the score on wrong choice of connectors or articles ($p < .001$). The score on insertion of connectors was significantly higher than omission of connectors; whereas there was no significant difference between the two for articles. The score on wrong choice of connectors was significantly higher than the score on omission of connectors ($p < .05$). However, no such difference between wrong choice and omission was found for articles. The degree of relationship between type of error and Score 2 was higher than that of grammatical item and Score 2.

No significant main effect for passage or two-way interactions involving passage was obtained. Neither was there a three-way interaction among passage, grammatical item, and type of error. Table 2 shows the mean score and standard deviation for each cell in the design. Analysis of variance results are given in Table 3.

Correction Score 1. The results obtained by using Score 1 as a dependent variable yielded very similar results to those obtained by using Score 2, except for the results regarding the interaction of the variables

TABLE 2
MEAN CORRECTION SCORES (SCORE 2) AND STANDARD DEVIATIONS

	Omission		Insertion		Wrong Choice		Total
	Passage 1	Passage 2	Passage 1	Passage 2	Passage 1	Passage 2	
Articles	5.900 (0.876)	6.400 (1.075)	6.500 (1.269)	6.600 (0.516)	5.100 (0.994)	5.400 (1.578)	5.983 (1.200)
	6.150 (0.988)		6.550 (0.945)		5.250 (1.293)		
Connectors	3.100 (1.101)	3.300 (0.823)	6.900 (0.316)	7.000 (0.0)	4.900 (0.876)	3.800 (1.398)	4.833 (1.824)
	3.200 (0.951)		6.950 (0.224)		4.350 (1.268)		
Total	4.675 (1.794)		6.750 (0.707)		4.800 (1.344)		

Passage 1 = 5.400 (1.554)

Passage 2 = 5.417 (1.740)

Note: Standard deviations are given in ().

TABLE 3
ANALYSIS OF VARIANCE OF SCORE 2

Source	df	MS	F	ω^2
Grammatical item	1	39.675	39.713*	.12
Type of error	2	54.158	54.210*	.33
Passage	1	0.008	0.008	
Grammatical item X Type of Error	2	57.050	28.552*	.18
Grammatical item X Passage	1	2.408	2.411	
Type of error X Passage	2	1.458	12.487	
Grammatical item X Type of error X Passage	2	1.358	1.360	
Error	108	0.999		

*p<.001

**p<.05

involving passage. Table 4 and Table 5 contain the mean score, standard deviation, and analysis of variance results.

Contrary to the Score 2 results, there was a significant two-way interaction between passage and grammatical item for Score 1. The mean score of Passage 2 was higher for articles, whereas Passage 1 was higher for connectors. A significant three-way interaction among passage, grammatical item, type of error was also obtained. For Passage 1, there was no significant difference between the mean score of articles and connectors for wrong choice. On the other hand, there was a significant difference between the two for Passage 2. That is, for Passage 2, texts with articles mutilated resulted in a higher mean score than texts with connectors mutilated. Consequently, in texts with mutilated connectors, the difference between wrong choice and omission was significant for Passage 1 but not for Passage 2.

Achievement Judgment. The rating of the likely academic achievement of the person who wrote the text was also used as a dependent variable. The only variable that had a significant main effect was grammatical item with the mutilation on articles being more favorably rated than the mutilation on connectors. No interactions were obtained. Table 6 contains the mean scores and standard deviations for achievement judgment. The analysis of variance results are presented in Table 7.

Subjects' Characteristics and Correction Scores. An examination of the correlations between demographic variables and the correction scores indicated that there was a moderate but significant relationship of subjects' judged knowledge of grammar and subjects' judged reading speed to Score 1, and of subjects' knowledge of grammar to Score 2.

TABLE 4

MEAN CORRECTION SCORES (SCORE 1) AND STANDARD DEVIATIONS

Gramm. Item Type of error Pass.	Omission		Insertion		Wrong Choice		Total
	Passage 1	Passage 2	Passage 1	Passage 2	Passage 1	Passage 2	
Articles	5.600 (1.265)	6.200 (1.135)	6.500 (1.269)	6.300 (0.675)	5.000 (1.155)	5.300 (1.767)	5.817 (1.321) P1=5.70 P2=6.93
	5.900 (1.210)		6.400 (0.995)		5.150 (1.461)		
Connectors	2.600 (1.174)	2.400 (0.699)	6.600 (0.699)	6.900 (0.316)	4.800 (0.789)	3.000 (1.155)	4.383 (2.034) P1=4.67 P2=4.10
	2.500 (0.946)		6.750 (0.550)		3.900 (1.344)		
Total	4.200 (2.028)		6.575 (0.813)		4.525 (1.519)		

Passage 1 = 5.183 (1.702)

Passage 2 = 5.017 (2.004)

Note: Standard deviations are given in ().

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TABLE 5
ANALYSIS OF VARIANCE OF SCORE 1

S o u r c e	df	MS	F	ω^2
Grammatical item	1	61.633	53.511*	.15
Type of error	2	66.325	57.584*	.33
Passage	1	0.833	0.724	
Grammatical item X Type of Error	2	35.408	30.742*	.17
Grammatical item X Passage	1	4.800	4.167**	.01
Type of error X Passage	2	2.608	14.036	
Gramm. item X Type of error X Pass.	2	4.225	3.608**	.03
Error	108	1.152		

*p<.001

**p<.05

TABLE 6

MEAN SCORES AND STANDARD DEVIATIONS (ACHIEVEMENT JUDGMENT)

Gramm. Item Type of error Pass.	Omission		Insertion		Wrong Choice		Total
	Passage 1	Passage 2	Passage 1	Passage 2	Passage 1	Passage 2	
Articles	3.375 (0.744)	3.333 (0.500)	3.571 (0.976)	3.222 (0.972)	3.667 (1.000)	3.333 (0.707)	3.412 (0.804)
	3.353 (0.606)		3.375 (0.957)		3.500 (0.857)		
Connectors	2.889 (0.601)	3.222 (0.667)	2.500 (0.972)	3.000 (1.414)	3.000 (0.667)	2.950 (1.101)	2.912 (0.931)
	3.156 (0.639)		2.737		2.950 (0.887)		
Total	3.200 (0.632)		3.029 (0.124)		3.211 (0.905)		

Passage 1 = 2.383 (0.940)

Passage 2 = 3.117 (1.236)

Note: Standard deviations are given in ().

TABLE 7
ANALYSIS OF VARIANCE OF ACHIEVEMENT JUDGMENT

Source	df	MS	F	ω^2
Grammatical item	1	6.604	8.235**	.04
Type of error	2	0.328	0.409	
Passage	1	0.005	0.007	
Grammatical item X Type of error	2	0.269	0.335	
Grammatical item X Passage	1	1.525	1.902	
Type of error X Passage	2	0.364	0.454	
Gramm. item X Type of error X Pass.	2	0.231	0.288	
Error	96	0.802		

*p<.001

**p<.05

Sex, knowledge of grammar, and reading speed were significant factors when used as covariates in the analysis for both Score 1 and Score 2. Males did better than females; subjects who claimed to have more knowledge of grammar and those who claimed to have faster reading speed did better.

Multiple regression analyses revealed that 75 percent of the variance of Score 1 and 70 percent of Score 2 were accounted for by the above three covariates, i.e., sex, knowledge of grammar, reading speed, and the three factors, i.e., grammatical item, type of error, and passage and their interactions.

Discussion

We assume that the higher the mean score on a passage, the easier it is to correct a particular grammatical feature and hence, according to our definition, the less crucial to communication. When the independent variable, grammatical item, was examined by itself, the results indicated that articles were easier to correct than connectors, which supports the global and local hypothesis.

However, it does not follow that article errors are always easier to correct than connector errors since the two variables, grammatical item and type of error, interact with each other. As shown in Figure 1 and Figure 2, which depict the interaction between grammatical item and type of error for Score 2 and Score 1, respectively, mutilation by omission of articles was easier to correct than omission of connectors; mutilation by wrong choice of articles was easier than wrong choice of connectors. Thus, the global/local

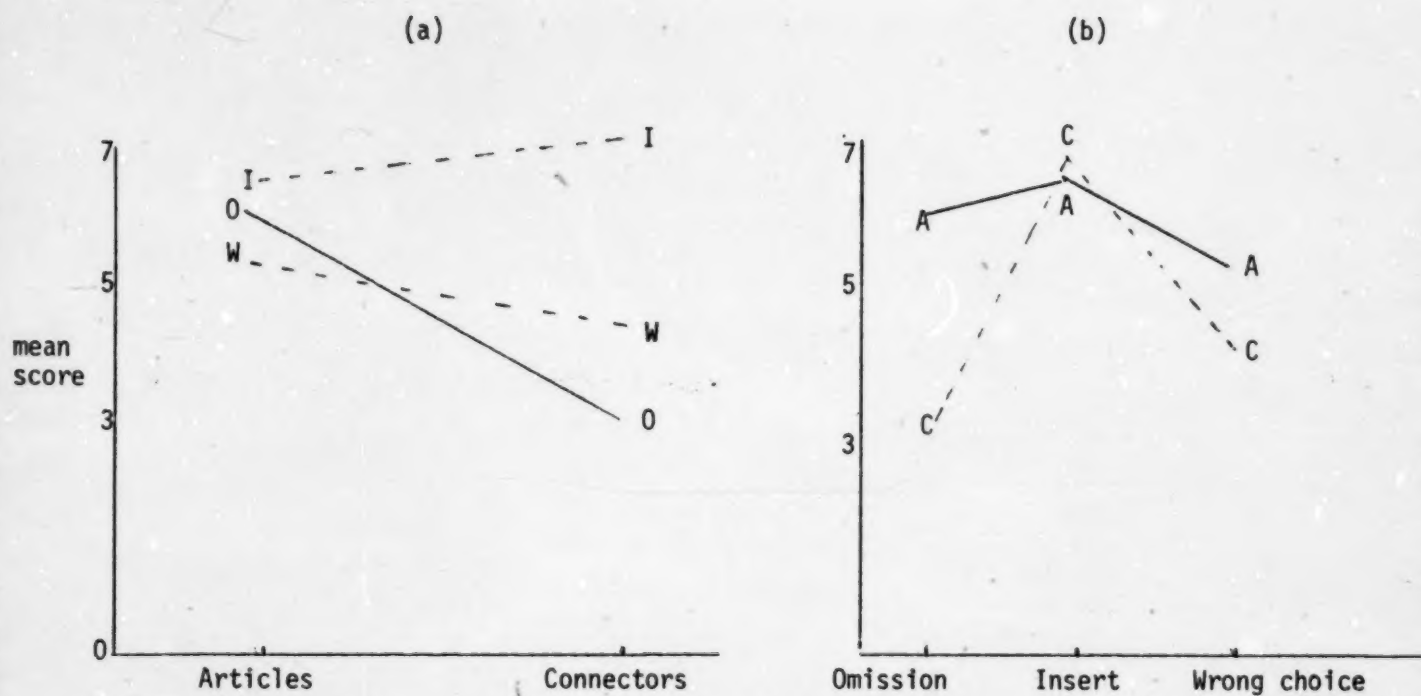


Figure 1. Interaction between Grammatical Item and Type of Error for Score 2.

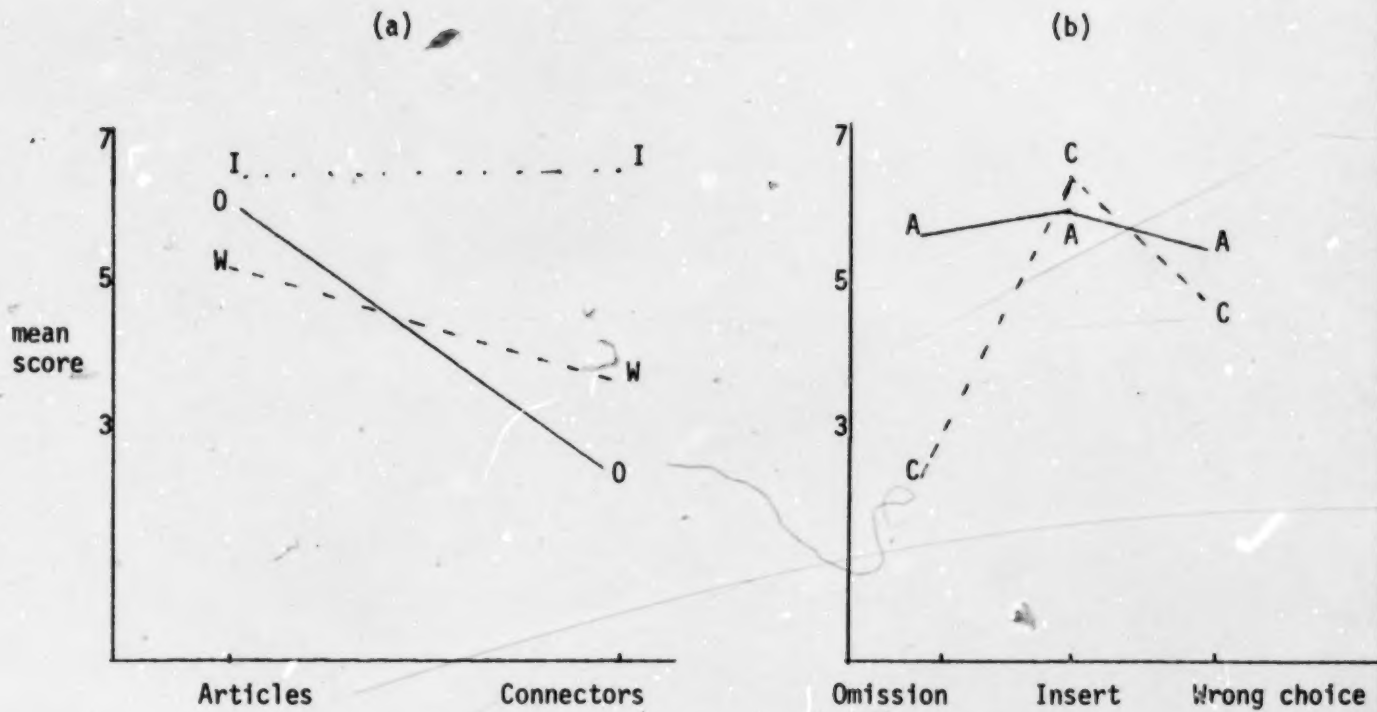


Figure 2. Interaction between Grammatical Item and Type of Error for Score 1.

distinction of grammatical item seems to be valid only for omission or wrong choice-type errors and not for insertion-type. It is common to both articles and connectors that insertion-type errors are easier to correct than wrong choice-type errors. Furthermore, for connectors, wrong choice-type errors were easier to correct than omission-type errors resulting in the difficulty ordering of omission, wrong choice, and insertion. On the other hand, for articles, there was no significant difference in the difficulty rank for omission.

A general implication of the above findings is that in order to accurately determine the hierarchy of errors in terms of communication breakdown, it is necessary to consider not only the grammatical items themselves but also how the students make errors with these grammatical items. In fact, the variable, type of error, was more important than grammatical item as defined by the amount of variance accounted for.

The difference between the results obtained by using Score 1 and Score 2 was that there was an interaction between passage and grammatical item, and among passage, grammatical item and type of error for Score 1, but not for Score 2. These two-way and three-way interactions obtained by using Score 1 are depicted in Figure 3 and Figure 4. Comparing the Score 1 results and Score 2 results, it could be seen that Score 2, the less stringent scoring rule, removes the effects of passage while Score 1, the stringent scoring rule, does not. It is possible to infer that the stringent scoring rule caused the passage effect. Therefore, from a measurement point of view, the results suggest that Score 2, the less stringent scoring rule, is preferable when passages vary.

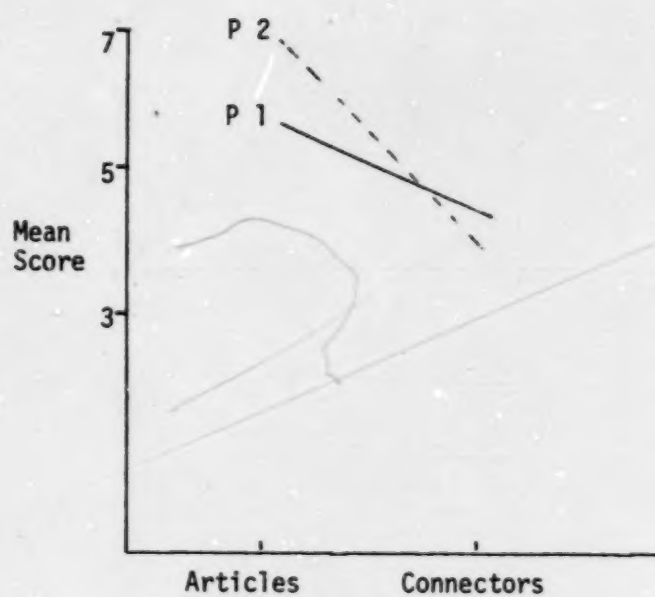
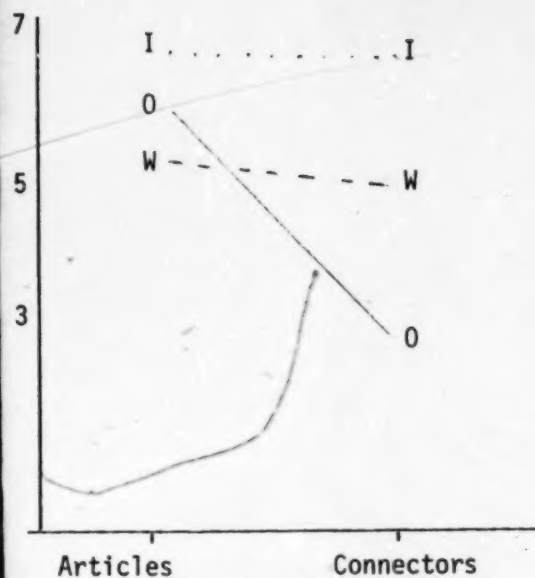


Figure 3. Two-way Interaction between Passage and Grammatical Item based on Score 1 results.

Passage 1



Passage 2

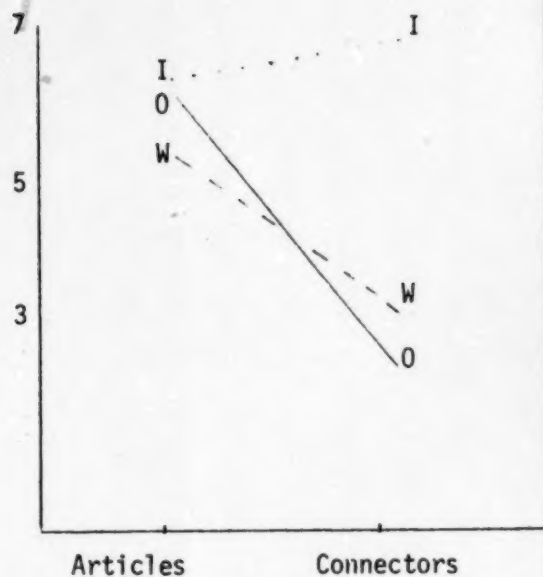


Figure 4. Three-way Interaction among Passage, Grammatical Item and Type of Error for Score 1.

A possible implication of the achievement judgment result is that foreign students' compositions containing global mistakes could be judged more negatively than those containing local mistakes. If such a proposition is valid, it may mean that the degree of grammaticality may have a potential effect on educational decisions such as admissions if the composition is an application letter or a required essay, and grading if it is an essay test answer as was used in the experiment.

The omission of grammatical items condition approximated the cloze procedure. Although the measure used in this experiment was by no means a complete form of cloze test, these results may have some implications for the cloze technique. Taylor (1956) investigated the issue of function word deletion vs. content word deletion. He found that function word deletion produced higher scores than those of content word deletion. Louthan's study (1965) also indicated that deletion of prepositions and conjunctions yielded higher cloze scores than deletion of every tenth word, nouns, verbs, and adjectives. Articles and connectors, which were deleted in this experiment, are both categorized as function words. Significant differences were found between the two in the present study. In relation to cloze procedure research, this may imply that we need to further distinguish function words into global and local words. Additional research is required to clarify this point.

Another issue which requires further study regarding cloze procedure is the issue of scoring rule. Taylor's study which considered the scoring criterion (1953) indicated that scores obtained by counting both grammatically correct synonyms and the exact-word deleted were not significantly better

than scores obtained by using only the exact-word criterion. In the present experiment we found that the scoring rule appeared as a passage effect. Thus method of scoring is an issue which needs to be investigated further.

The results obtained from this study may have several applications for the teachers and students of ESL. First of all, when teachers are faced with students' errors, they should be aware not only of the grammatical items that were mistaken but also of the way students make errors with these grammatical items. Both factors should be taken into account when they attempt to determine what is most important to correct.

Second, teachers need not worry too much about the error if the error is made in the way that is unnecessarily inserted on the condition that the only purpose of the production of sentences was successful communication and not a matter of style. However, unfortunately enough, insertion type errors are comparatively rare among foreign students' composition, especially with connectors.

Except for insertion type, it is safe to give priority of correction to connectors rather than to articles. Further research will hopefully be able to determine whether this principle could be extended to other items which are theoretically thought to belong to global or local category.

Furthermore, instructors should teach students to avoid connector errors especially when the writing will be used to make academic judgment.

Knowledge of grammar, along with two other factors, was considered to significantly contribute to correctability with respect to communication, which seems to be an important qualification for teachers of ESL. This

gives support to including course work which would familiarize prospective teachers with the grammatical structure of English in a teacher training course.

The results of the study have implications not only for ESL, but also for educational research and evaluation in general. The general question on the measurement of communication breakdown is addressed as well as measurement issues on the issue of cloze techniques and the assessment of writing competence. When taken literally, the results suggest that (a) there are distinguishable types of grammatical errors that affect performance in the correction of prose material, (b) the type of grammatical elements omitted and the scoring rule affect performance on cloze-type measure, and (c) certain types of grammatical errors have more adverse effects on judgment of writing competence than other types of errors. While the findings were only suggestive, it seems clear that more work is needed on the role of grammar and syntax in the measurement of language and reading comprehension and in the evaluation of writing competence.

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